October 4, 2018

Cristina Fernandez
Director, Air Protection Division
US EPA Region 3
1650 Arch Street
Mail Code 3APOO
Philadelphia, PA 19103-2029

Dear Ms. Fernandez;

The Allegheny County Health Department (ACHD) continues to make progress on removing its backlog of Title V operating permits.   As part of our efforts to improve the speed of permit issuance and renewals, ACHD has begun an analysis of the flow of data pertaining to permitting. Attached please find the first analysis completed by our contractor, VISIMO. This analysis, along with the attached schedule for identifying, installing, programming, and implementing a new permit tracking system, serves to fulfill the requirement of the EPA Title V Program Evaluation, dated May 2018.

The remaining deliverable, the financial review, has begun, and will be submitted within the audit's deadline.

Please contact me if you have and questions or concerns regarding this analysis and implementation.
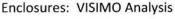
Sincerely Yours,

Jayme Graham, Manager
Air Quality Program

RECEIVED

OCT 0 9 2018

Air Protection Division

Enclosures: VISIMO Analysis
             Schedule IT Assessment & Implementation

2018-08-26

VISIMO

IT ASSESSMENT

PERMITTING DEPARTMENT – AIR QUALITY DIVISION
ALLEGHENY COUNTY HEALTH DEPARTMENT

PRESENTED BY: JAMES JULIUS
MANAGING PARTNER, VISIMO

IT ASSESSMENT

PLAN OVERVIEW

Practice:	Name
VISIMO Practice Lead	James Julius
ACHD Leadership Contact	Ron Sugar
Air Quality division Contact(s)	Jim Kelly, Jayme Graham

OBJECTIVE

VISIMO was consulted by Allegheny County Health Department (ACHD) leadership to perform an objective IT assessment that will be used to shape future IT improvements of the division.

TARGET CONDITION

WHAT IS THE DESIRED OUTCOME?

- Assess the current IT capabilities and how is technology currently being used
- Assess current gaps and inefficiencies caused by the current technology environment
- Identify potential efficiency gains created by a successful technology deployment
- Identify several key objectives to successfully deploy technology in the Air Quality division
- Identify possible software options available to deploy

APPROACH

The process included in-depth interviews with several permitting engineers and the leadership team. We also interviewed the IT Project Manager and one of the key Information Technology contributors in the department.

We had focused most of our time and efforts with the permitting department and worked through them to get a holistic understanding of how the Air Quality division is structured. It is recommended that before a full IT deployment would take place that first a full Air Quality division assessment be conducted.

PROCESS

INTERVIEWS

Interviews were conducted with the 7 permitting engineers, the department secretary, and the department manager as well as the overseeing Project Manager and the Deputy Director of the Air Quality division. The purpose of the interviews was to reveal what type of work is done, how often, and when. It was also to understand the level of collaboration and communication that occurs across departments and what modalities are used to facilitate and foster a collaborative environment.

The department's IT Project Manager was interviewed to understand the layout of the current Air Quality IT environment – what systems were used, how they were deployed, and who used them. It was also to understand the landscape more broadly of how IT decisions are made within the ACHD and what elements are most important to leadership when making a decision.

Finally, we also conducted an interview with the Management and Information Systems team lead – he was instrumental in rolling out the existing IT environment so the purpose was to understand what was deployed, what its intention was, and if it's being used correctly.

CURRENT CAPABILITIES

To discuss the current capabilities, we will do so across several key dimensions – DATA MANAGEMENT, INFORMATION MANAGEMENT, COMPLIANCE, REPORTING AND ANALYSIS, and COMMUNICATION.

DATA MANAGEMENT is how and where data is saved in a company. Examples of this include a shared file directory, a document management library such as SharePoint, or sophisticated software products. There are multiple ways data is currently saved and stored across the Air Quality division. For instance, there is a dedicated share drive where shared and individual files are stored. Files are stored both by type of permit and by facility – however, the data is not synced across the directories and results in data incompleteness and inconsistencies. Considering that data is often challenging to find, each engineer stores their own data independently in their own directory. As a result, data is oftentimes found in duplicate and triplicate and in varying versions. There does appear to be an approach for how and where data is stored and managed.

INFORMATION MANAGEMENT is keeping unified and thorough records across facilities and functions. Examples of this would be a centralized database to store company, contact, facility, and equipment information. There is a current information management system, but it is rarely used. Feedback from the engineers and the IT Project Manager suggest that the user interface and user experience are key reasons that the division does not use the system. As a result, most of the information is distributed rather than centralized and it is stored in unstructured formats such as written permits rather than a centralized location. Of the data that is centralized, there are many duplicates and inaccuracies.

COMPLIANCE is how data and information is used in order to maintain both departmental compliance with external agencies (ACHD Article 21, PA DEP, EPA, etc..) as well as regulations (Clean Air Act, New Source Performance Standards, National Emission Standards for Hazardous Air Pollutants, etc..). This information is then used to create and enforce permits. It's important to note that as part of this exercise we did not delve deeply into the compliance area of this project and it is recommended that further investigation is conducted in a later phase to understand this better. Of the research that was conducted it was determined that the engineers are compliant with these regulations and agencies – it was also determined that a lot of time is spent in researching and identifying appropriate regulations. This regulatory information did not appear to be stored locally or in a centralized fashion. As such compliance is an ongoing and regular task and its success is highly contingent upon the skill of the engineers in the department.

REPORTING AND ANALYSIS is how information is used, aggregated, and distributed in order to make decisions. It's important to note that as part of this exercise we did not delve deeply into the reporting and analysis function of the entire Air Quality division as part of this project and it is recommended

that further investigation is conducted in a later phase to understand this better. This information would be primarily used by the monitoring department. All information seems to be disaggregated across the division – for instance complaint information is stored in its own system. The information, while stored in a structured way, is not stored in accordance with system design principles and cannot be easily aggregated with other information. In speaking anecdotally during the interviews, it seems that each function within the Air Quality division partially uses technology in some fashion. As a result, when it comes to reporting and analysis it takes some effort in order to provide an accurate comprehensive picture of all functions within air quality. Additionally, it's challenging for department managers to understand what is currently being worked on as there's no centralized place to manage information.

COMMUNICATION is how the division uses technology to communicate with their customers (companies), constituents (community) and external parties (regulatory agencies, environmental groups, etc..). Communication occurs primarily in four modalities – in-person, phone call, e-mail, and written publication. Each individual contributor monitors and manages their communication flows independent of the group unless it's a particularly complex issue. One challenge communicated was that a communication attempt will occur (phone or email) and sometimes they forget to follow-up later in a timely manner.

ADDITIONAL GAPS AND INEFFICIENCIES

As a result of not having a centralized system that everyone in the Air Quality division uses, the teams tend to operate in a siloed manner. Cross-functional collaboration that is necessary for optimal outcomes, such as the permitting and enforcement collaborating, occurs through management integration. While this is not necessarily a gap, there is a huge potential to improve the overall function of these departments and to create a more unified approach to air quality management. Leadership also integrates on a regular basis. As a result, a lot of administrative time is necessary in order to maintain accountability and collaboration.

POTENTIAL EFFICIENCY AND EFFECTIVENESS GAINS

Centralized data collection practices and information flows would greatly improve internal and external outcomes and the speed in which those outcomes are accomplished. A few potential tangible outcomes are listed below:

- VISIBILITY – Right now it is challenging to answer questions around equipment types across facilities, how that correlates to enforcement records or area complaints, or items outstanding for that facility. Being able to see everything in one place would allow leadership and management to think more strategically.
- REDUCING TIME WAITING – With a centralized place to store activity-based data, reminders can be established to ensure follow-up is occurring in an intended timeframe.
- REUSABLE INFORMATION – Being able to access information quickly on how other similar facilities or pieces of equipment are treated will greatly reduce future processing times for permitting activities.

Based upon a parallel workforce analysis of the permitting department, the data suggests that a successful IT deployment would improve the overall efficiency of the division as a whole. This would allow for increased speed, greater accuracy, and improved scalability of information in the division.

KEY OBJECTIVES FOR A SUCCESSFUL IT DEPLOYMENT IN THE AIR QUALITY DIVISION

IT deployments in cross-functional organizations can be challenging – everyone wants something slightly different and even in adjacent departments sometimes differences in language or terminology can cause a lot of confusion. Below are a couple of key objectives to follow to ensure a successful IT deployment in the Air Quality division.

- FOCUS ON REPORTING AND DATA STRUCTURES – The performance of the division will be determined based upon the quality of the data in the system. Begin with the end in mind – what are the key questions that we will be looking to answer and then develop the software requirements. These questions will be based on indicators such as Key Performance Indicators or Key Behavior Indicators. If these do not exist at a department and a division level, it's recommended that this exercise be completed as part of the early-stages of the project.
- CHOOSE A TECHNOLGY PLATFORM THAT IS ALIGNED TO OPTIMAL PROCESS OUTPUT – The current system that's in place isn't actively used because it's hard to navigate, has duplicate data, and is not aligned to how business is conducted. The software selected should align well to Air Quality divisions as a whole. This includes centralized data structures for facilities, equipment, and compliance that all of the division's functions would tie into. The purpose is to be a single platform for the entire division to use.
- FOCUS ON THE USER INTERFACE AND USER EXPERIENCE – Each team should be interviewed in-depth regarding how they go about doing their respective tasks. Those tasks should include universal language across departments. From there all of the tasks are overlaid in a tool like Visio and reviewed with management of all of the teams to ensure accuracy of terminology and process flows. Once this is complete, a team of tech savvy people should be assembled representing all of the Air Quality division – this sample will be used as the pilot group for testing and iterative development. They will be responsible for "trying to break" the software during the deployment and be heavily involved in the iterative development process.
- CREATE A WELL-DEFINED SCOPE OF WORK – There's one thing that will kill every IT deployment and it's scope creep. Each distinct task should be mapped and included in a statement of work clearly outlining the scope – this statement of work also has an anticipated go-live date.
- CHOOSE THE CORRECT SOFTWARE DEVELOPMENT AND DEPLOYMENT METHODOLOGY – There are two main types of a software development life cycle (SDLC) – Waterfall and Agile. These apply to situations where we are working with a vendor's software product or where we are developing software in-house. Both have their strengths – waterfall organizes tasks in series from conception to deployment. Agile organizes tasks in an ongoing iterative development methodology. In an initial deployment such as this – substantial and transformative, but also in an environment with no existing technology that is unlikely to change in a short period of time – it's recommended to take a hybrid approach. In a hybrid approach the initial deployment included on the statement of work follows a waterfall approach and marches toward a go-live date. Enhancement requests are evaluated regarding their impact on the go-live date and are developed in an agile methodology in parallel path to the waterfall method. The end result is having a well-defined intentionally-developed product at the outset but also having the flexibility to rapidly iteratively develop post-go-live.
- HIRE A DEDICATED PROJECT MANAGER TO MANAGE THE LIFE OF THE PROJECT – Work with a dedicated resource to be responsible for the overall success of the project. This person would work with management and leadership as well as internal and external IT resources.

- ALLOCATE AN APPROPRIATE AMOUNT OF TIME FOR A ROLL-OUT – In a situation like this, where a system will be integrating cross-functional teams and business process changes may occur, it is recommended to give at least 12 months for a successful application deployment.

IT DEPLOYMENT OPTIONS

There are essentially two options for an IT deployment – build versus buy. With respect to building a new solution you can leverage existing software and develop from there, or you can purchase a new software platform and develop fresh. Below is a quick synopsis of each option.

BUILD – LEVERAGING IN-HOUSE SOFTWARE – The Allegheny County Health Department has an investment in a pretty good back-end solution in Oracle.

- PROS
    - Oracle is a pretty robust database solution and can scale well if the data model is developed well and normalized.
    - Licensing is already purchased.
- CONS
    - The web user interface you can develop as part of the Oracle platform leaves a lot to be desired from a user-interface and user-experience point of view. Other software products can be purchased to act as a front-end to the Oracle back-end.
    - Cannot integrate with external regulatory sources of information.

BUILD – LEVERAGING OFF-THE-SHELF SOFTWARE AND DEVELOPING – There are products out there like QuickBase that allow a modular cloud-based approach to rapid software development.

- PROS
    - Tools like these are cloud-based so you can access them anywhere.
    - Generally, these type of tools can be developed rapidly.
    - The user-interface that can be developed is usually superior to in-house products.
- CONS
    - The licensing model is usually per-user and recurring. This allows for the total software cost to be distributed over the lifetime of the software purchase rather than a majority upfront and reduced cost over time. While this is not necessarily a con per se, in the case of evaluating one BUILD solution versus another BUILD solution, it could be more expensive.

BUY – LEVERAGING BEST-IN-CLASS SOFTWARE DESIGNED FOR A SPECIFIC PURPOSE – They key advantage here is that another company has already done the majority of the legwork in identifying what works in other Air Quality divisions and are selling a piece of software for that specific purpose.

- PROS
    - Expert-designed software that allows you to grow your processes into a best-in-class platform.
    - Integrates with regulatory databases for scalable and reusable equipment regulations.
- CONS
    - Usually the most expensive of the three options.

o Will not always mirror the internal processes like-for-like. Critical decisions need to be made at these points – change the internal process or create an out-of-system solution.

IT ASSESSMENT CAVEATS

As previously mentioned throughout the document, there are several caveats..

- This document was developed from a subset of the Air Quality division. There are likely additional opportunities within the division that are not captured in this assessment.

SOFTWARE OPTIONS AVAILABLE

The options that follow reflect purchasing software from an external partner. It's important to note that it's recommended that a thorough cross-functional evaluation of all departments in the Air Quality division are assessed prior to vendor recommendation and selection.

The Air Quality division's IT needs are multi-faceted. Each team's requirements are likely similar but very specific to their functions. Their needs are very complex as compared to other government functions – this is due to the ever-changing regulations and complexity associated with measuring emission levels varying by equipment and facility size. Given this it's ideal to target software companies that specialize in air quality department management.

Air Quality department management software is a very niche market. There are only a small handful of providers that provide best-in-class Air Quality department management software. One option was from a company called Enablon. http://www.enablon.com

From Enablon's website, *"Enablon's Air Quality Management Software enables companies to comply with air pollutant and emission regulations, as well as air permit requirements, from around the world. The application embeds sophisticated capabilities that perform complex calculations at high volume, and on an on-going basis, to ensure accuracy of air emissions calculations throughout all facilities."*

This software would improve all aspects of the current capabilities mentioned earlier – including standardizing data management, improving inventory management, ensuring regulatory compliance, reporting on air emissions, and ultimately improving environmental performance. Enablon provides services to over 1,000 companies and to over 1 million end users. They are considered among the top 3 of environmental health safety software providers and the top air quality management software available. The software can be deployed both on-premise as well as cloud-based. Enablon also has an emissions calculation and scenario analysis portion of its toolset.

Honorable Mentions -

http://www.viewpointcloud.com/

https://www.accela.com

https://www.citizenserve.com

These three products are government-based document and workflow solutions. They would provide many of the same functions as Enablon but are more of a general government-management platform.

CONCLUSIONS

In conclusion there are several software products that could improve the Air Quality division. These products could be developed internally or purchased externally. All teams in the division will greatly benefit by a centralized system, and leadership would benefit from having improved line of sight to the operational performance.

Schedule for IT Assessment and Implementation
Allegheny County Health Department
Permitting and Enforcement Activities

ID	Task Name	Duration	Start	Finish
0	**Assessment and Implementation**	**422 days**	**Thu 11/1/18**	**Fri 6/12/20**
1	Review Permitting and Enforcement Workflow	22 days	Thu 11/1/18	Fri 11/30/18
7	Review of Enforcement workflow	22 days	Thu 10/1/18	Fri 11/30/18
17	Develop summary of key functions of Permitting and enforcement and identify overlap	22 days	Sat 12/1/18	Mon 12/31/18
25	Preliminary assessment of vendors	23 days	Tue 1/1/19	Wed 1/30/19
32	Obtain additional funding if needed	20 days	Fri 2/1/19	Thu 2/28/19
48	Develop RFP, open for bidding	20 days	Fri 2/1/19	Thu 2/28/19
57	Presentations by bidders	60 days	Fri 3/1/19	Thu 5/23/19
67	Issue contract with bidder, purchase product	30 days	Wed 5/1/19	Tue 6/11/19
74	Software configuration	180 days	Mon 7/1/19	Fri 3/6/20
81	Test system	30 days	Mon 3/9/20	Fri 4/17/20
86	Train Staff	30 days	Mon 4/20/20	Fri 5/29/20
86b	Documentation complete	30 days	Mon 4/20/20	Fri 5/29/20
87	System Implementation	10 days	Mon 6/1/20	Fri 6/12/20
88	Software development template complete	0 days	Wed 3/11/20	Wed 3/11/20